

# Collapsing Food Chains and Food Webs

Grade 5 – Science and Technology



## Lesson Details

<b>Grade Level:</b>	5	<b>Curriculum Links:</b>	Science and Technology	<b>Time Needed:</b>	1 Hour – 1.5 Hours
<b>Learning Goal</b>	To become familiar with species in an Ontario wetland and science terminology. To understand food chains/webs, the relation between living things and how an ecosystem can collapse without all organisms.				
<b>Success Criteria</b>	By the end of this lesson, students will understand how different living things are connected by a food chain, and a complex food web. Students will be familiar with how different organisms are connected in their ecosystem.				
<b>Specific Expectations</b>	<p><i>Understanding Life Systems: Human Organ Systems</i></p> <ul style="list-style-type: none"> <li>Assess the effects of social and environmental factors on human health, and propose ways in which individuals can reduce the harmful effects of these factors and take advantage of those that are beneficial;</li> <li>Identify forces that act on and within structures and mechanisms, and describe the effects of these forces on structures and mechanisms.</li> </ul>				
<b>Materials Needed</b>	Worksheet (attached), Pencil, Tape/Glue, Scissors, Colouring Pencils.				

## Lesson Description

<b>Overview</b>	Students will learn about food chains and food webs by exploring a beaver pond food web and the life within it.
<b>Activity</b>	<ol style="list-style-type: none"> <li>Begin by introducing the concept of a food chain and food web.</li> <li>Ask the students to list off a food chain they are familiar with.</li> <li>Next introduce the beaver pond and ask the students what organisms might live within it.</li> <li>Hand out the attached worksheet and required supplies.</li> <li>Students will complete the worksheet and accompanying activity individually.</li> <li>Optional: take up the worksheet together as a class.</li> </ol>
<b>Background Information</b>	<p>Wetlands teach us the relationships between the environment, plants, and animals. For example, wetlands have systems to filter water, which benefits turtles. In return, turtles provide valuable services to wetlands, including consuming debris and dispersing seeds. In an ecosystem everything is connected, and we have food chains and webs to help us visualize such connections. Organisms, such as living things like a fish, interact with other living things, but also non-living things, such as water.</p> <p>A simple food chain is made up of four different “levels”: <b>Energy Producer</b> (E.g. Sun), <b>Producer</b> (E.g. Lily Pad), <b>Primary Consumer</b> (E.g. Fish), and <b>Secondary Consumer</b> (E.g. Turtle). If one element of the food chain suddenly disappears there is an increase in the others which often times results in poor conditions for the ecosystem as the organisms are out of balance. A food web shows the complex relationships and interactions between all the organisms in an ecosystem, rather than the few in a food chain.</p>
<b>Blacklist Masters</b>	<ul style="list-style-type: none"> <li>Worksheet (attached)</li> <li>Video Link(s): <a href="#">Turtle Food Chains and Food Webs</a></li> <li>For more information, please visit <a href="https://www.turtleguardians.com/why-saving-turtles-is-important/">https://www.turtleguardians.com/why-saving-turtles-is-important/</a></li> </ul>

## Lesson Description

<b>Place-Based Learning</b>	Students will reflect on their own community and how local environments are connected through a food chain or web. Having this knowledge will allow the students to become more conscious about environmental conservation and how organisms are connected.
<b>Inquiry-Based Learning</b>	Using <b>Structured Inquiry</b> , students will complete the worksheet and investigate the connections amongst wildlife.  Ask the students: <ul style="list-style-type: none"><li>• What words are associated with a food web or chain? (E.g. Biotic, Abiotic, Producer, Consumer, etc.) And how does a food web or chain function?</li><li>• What happens when populations of species become unbalanced?</li></ul>
<b>Turtle Stories</b>	Visit a natural area and create a food web based on the plant and animal life you find. How complex is it? Students are encouraged to share their experiences, pictures, and worksheets on the Turtle Stories website, found here: <a href="https://www.turtlestories.ca/">https://www.turtlestories.ca/</a>
<b>Turtle Guardian Program Links</b>	After completing <b>Level 1</b> (Ontario Turtle Identification) of the <b>Turtle Guardian Program</b> , students can move onto <b>Level 2</b> (Wetland Watchers). In this level the students learn the importance of wetland protection and how to protect turtle nests. They then can become official nest sitters and wetland watchers (when accompanied by an adult). For more information, please visit <a href="https://www.turtleguardians.com/what-is-a-turtle-guardian/">https://www.turtleguardians.com/what-is-a-turtle-guardian/</a>

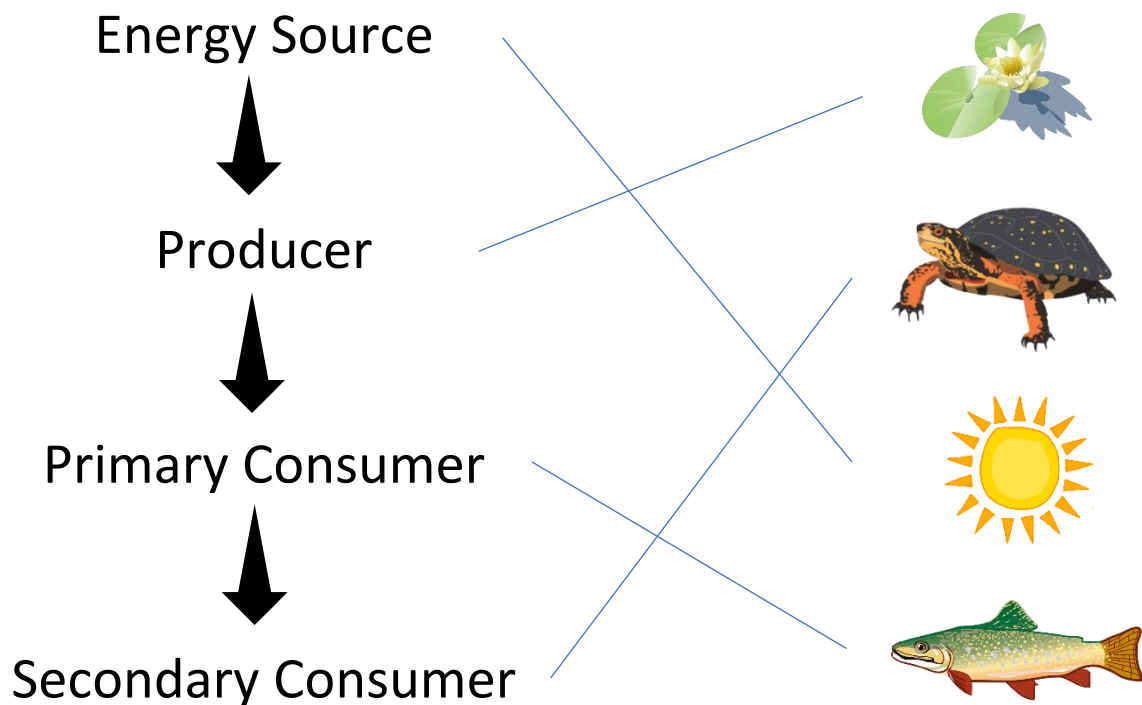
## My Notes



## Collapsing Food Chains and Food Webs

Let's explore a wetland that was created by beavers. The beavers dammed up a stream and created a whole new environment. This is called a beaver pond. There are many living things in a beaver pond. The pond is an **ecosystem**, where everything is connected. All of the living things (called **organisms**) interact with each other and with non-living things like the water.

**Question 1.** Here is a simple food chain in the beaver pond. Match the correct picture with where it belongs in the food chain.



A **food chain** shows us the interaction or relationships between a few organisms in the pond. Now we will explore a **food web**, which shows many interactions in the pond. This helps us to understand how everything is connected.

Take a look at the food web on page 3 to answer the following questions.

**Question 2.** Explain a food chain that is in the food web.

Example: Algae → Painted Turtle → Great Blue Heron

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**Question 3.** Take a look at the beaver in the food web. Circle the answer that best fits the following phrase: The beaver is a...

a) Producer

b) Primary Consumer

c) Secondary Consumer

**Question 4.** Where would a human fit in this food web?

Humans influence many elements of this food web. Humans hunt wolves, they fish, we build human-made dams which can alter how a beaver has designed their pond, ultimately affecting all wildlife within it.

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Colour, cut out, fold, and glue (or tape) together the cubes on pages 4 and 5. Once all the cubes have been put together, create a food chain (or food pyramid) out of the cubes with producers on the bottom, primary consumers in the middle, and secondary consumers on the top. Answer the following questions based on your food chain.

**Question 5.** What would happen if the Painted Turtle was removed from the ecosystem? What would happen to their prey and predator species?

The Great Blue Heron would consume more snapping turtles, or other prey of theirs which would ultimately affect those species prey as well. The prey of the Painted Turtle would increase in population.

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**Question 6.** Try removing a different organism. Which organism did you choose? What happened? What would happen in a real ecosystem?

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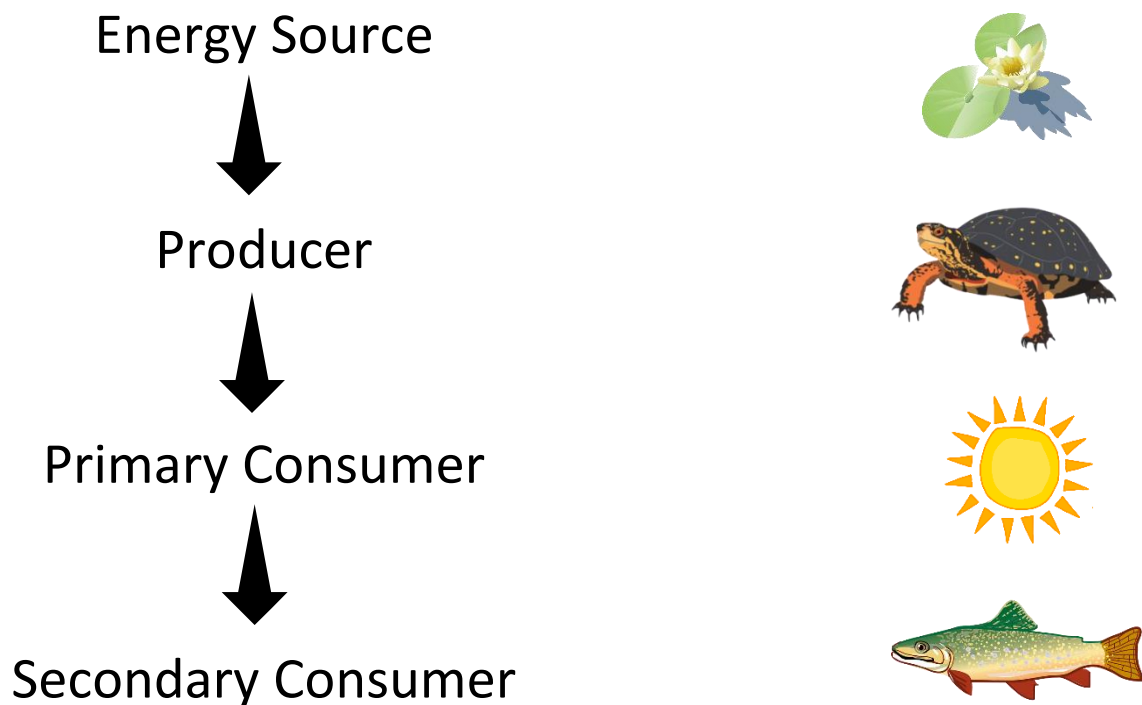
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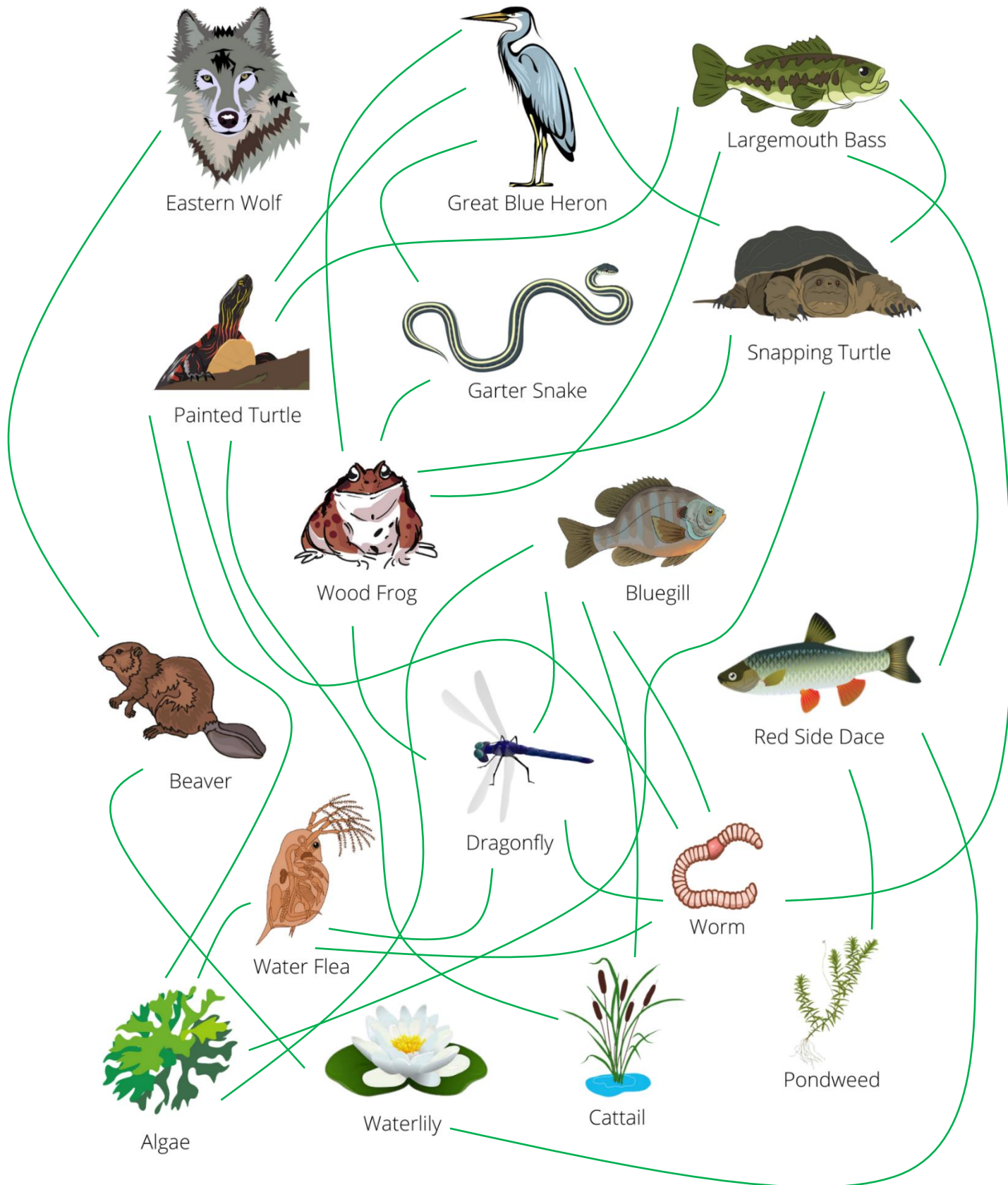
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# Beaver Pond Food Web





# Cut-out Cube Food Chain (Pyramid)

Cut on the SOLID LINE

Fold the DOTTED LINE

